CHAPTER 2
SAFETY

2-1. GENERAL.

Most military installations have swimming pools. The benefits derived from swimming and the safety associated with it depend on how these pools are operated.

2-2. OPERATING SUGGESTIONS.

A swimming pool can be both safe and enjoyable if proper supervision of bathers and proper maintenance of the pool facilities are accomplished. Safe operation suggestions, such as the following, can provide the responsible swimming pool operator a basis for preventing serious injury or for treating accidents rapidly:

a. Keep crystal clear water in the pool.

b. Employ well trained and alert guards to prevent minor injuries and drownings.

c. Maintain rescue equipment such as hook poles and life preservers at all times.

d. Have a telephone installed in a prominent location, along with a list of telephone numbers of emergency medical and or rescue facilities available at the installation. The list should be protected adequately against defacement from weathering, vandalism, and other normal causes.

e. Limit number of bathers using pool to that prescribed in paragraph 3-8, TB MED 575.

2-3. DANGEROUS PRACTICES.

a. Signs prohibiting the following dangerous practices should be posted in the pool area:

(1) Swimming alone or without supervision.

(2) Entering pool soon after eating (the larger the meal, the longer interval before safe swimming).

(3) Overexposure to sun or water.

(4) Boisterous conduct such as running, shoving, throwing others into pool, or attempting feats beyond skill or endurance.

(5) Diving in shallow water or bounding on diving board.

(6) Tag and follow-the leader games.

(7) Swimming during thunderstorms (lightning danger).

b. Swimming pool operators can eliminate many of the above dangerous practices through alert supervision of the pool area. (Suggestion: Provide instruction periods and organized aquatic programs.) Other dangerous practices, such as inexperienced persons tampering with equipment and lifeguards engaging in unnecessary conversation, should also be closely supervised. (Suggestion: Many pools would benefit by giving the lifeguards more responsibility and authority to control bathers.)

2-4. POOL DESIGN.

For pool design parameters see TB MED 575.

2-5. POOL DEPTH.

The water depth should be marked plainly at or above the water surface on the vertical pool wall and on the edge of the deck next to the pool. The points of maximum and minimum depth, the points of break between the deep and shallow ends, and intermediate 1-foot increments of depth should be marked. Intervals between depth markings should not be more than 25 feet; numerals should be 4 inches minimum height and of a contrasting color. The outlet of the pool should also be marked plainly in an appropriate contrasting color.

2-6. POOL ACCESSORIES.

Diving boards, diving platforms, and ladders to slides should be rigidly constructed, should have nonslip surfaces, and should be properly anchored to insure stability under the greatest possible load. At least 15 feet of unobstructed headroom should be provided above all diving boards and platforms. A horizontal separation of at least 10 feet should be provided between diving boards and sidewalls (this may be reduced to 8 feet for surface boards). The maximum safe elevation of diving boards and platforms above the surface of the water in relation to the depth of the water is given in the following table:

Height of board or platform (feet)	*Minimum water depth at end of board and 12 feet beyond (feet)*	*Minimum pool width at end of board and 12 feet beyond (feet)*
0-6	8.5	20
6-9	10.0	30
>9	11.5	30

2-7. WATER CLARITY.

Clarity of water should be maintained at all times during the pool season, not only for attractiveness, but also as an indication of proper equipment functioning and as an accident prevention means. A black disk 6 inches in diameter on a white field, when placed on the bottom in the deepest point of the pool, should be

clearly visible from the sidewalks of the pool at all distances up to 10 yards, measured from a line across the pool through the disk. This minimum standard should easily be met by modern filtration systems.

2-8. POOL COLORS.

One of the outstanding assets of any pool is its clear, sparkling water and this is displayed best by having the pool walls and bottom of a light color. Light colors also improve visibility. White, light blue, and aqua blue are frequently used with excellent results. Alternately, dark colors absorb light, restrict vision, obscure dirt deposits, and tend to make maintenance personnel lax in removing sediment.

2-9. POOL LININGS.

For design information on pool linings refer to TB MED 575.

2-10. POOL LIGHTING.

Proper pool lighting not only enhances the appearance of the pool area, but also provides necessary illumination for safety. Arrangement and design of lighting should be such that all surface and bottom areas of the pool, springboards, towers, floors, and other appurtenances are clearly visible to the lifeguards. Lights within sidewalls must be protected and recessed to prevent tampering or breakage. Underwater lights must be grounded and installed so as to prevent hazards to bathers. Electrical safety requirements are stated in article 680 of the 1981 National Electrical Code and have been made more stringent than previous requirements. Therefore, pool facilities constructed prior to this may not meet minimum electrical safety standards. Underwater lighting and electrical outlets in the pool area should be examined to insure that they comply with current requirements for ground fault protection and distance (clearance). In general, it is good practice to remove all unnecessary electrical equipment in the pool area and maintain the essential equipment in accordance with the National Electrical Code.

2-11. ACCIDENT PREVENTION.

Accidents and drowning deaths are the most serious problems in the control of swimming pools. Lack of effective bather supervision, poor construction, and improper operation and maintenance of equipment are prime causes of such casualties. A regular routine should be established for daily inspection of the pool area and all pool equipment. The cracking or flaking of concrete can be hazardous to bathers and should be repaired as soon as possible. Pool ladders, diving board supports, diving towers, and lifeguard chairs should be periodically checked to assure that they are firmly anchored and in good condition. Ladders and diving equipment should be inspected for the presence of any foreign matter which would render them slippery. After maintenance of moving parts or electrical connections in the equipment room, a safety check should be made to assure that all safety guards and electrical box covers are replaced and valves are properly tagged and positioned. Electrical circuits should be deenergized before working on any equipment. Where wet, slick, or other conditions contribute to slippery walking surfaces and consequent hazards to personnel, nonslip surface treatments should be applied.

2-12. DANGEROUS CONDITIONS.

The following dangerous conditions should be eliminated:

a. Poorly drained, slippery floors and walks.

b. Shower-valve arrangement capable of scalding (central automatic mixing valve is best).

c. Caking soap or leaking soap dispenser.

d. Abrupt changes in the slope of the pool floor or underwater steps.

e. Insufficient depth or area for diving.

f. Excessively high, shakey, or slippery diving equipment.

g. Lack of water depth markings.

h. Turbid water (the bottom at the deepest point should be easily visible from the pool edge).

i. Pool drains, outlets, or other fixtures which could hold a person underwater.

j. Electrical equipment capable of shocking (e.g., underwater light fixtures must be grounded).

k. Water slides poorly located, causing “traffic” congestion.

l. Projecting or ungrated pipes.

m. Improperly vented chlorinators.

n. Use of glass containers of any type in the pool area.

2-13. LIFESAVING FACILITIES.

Equally as important as preventing accidents is being prepared to quickly and effectively respond to an accident. Preparedness includes the following items:

a. Lifeguards: A qualified lifeguard having a valid American Red Cross Senior Certificate or equivalent should always be on duty when the pool is in use and should be positioned to observe the entire swimming area.

b. Lifesaving Equipment: Swimming pools should be furnished with the following lifesaving equipment: (a) a pole, greater in length than one-half the swimming pool width, capable of extension to all sections of the floor of the pool, constructed of suitable lightweight

material and having a life hook (shepherd's crook) at the end with an aperture of at least 18 inches between the tip of the hook and the tip of the pole; (b) a "flutter board," approximately 1 foot by 3 feet by 3 inches, capable of supporting in water a weight of not less than 20 pounds; with 3/16-inch lines attached at least equal in length to the maximum width of the pool; and (d) a separate throwing rope with a length not less than one-half the maximum width of the pool. These items should be furnished on the basis of one each for every 2,000 square feet of pool surface area (see figure 2.1). Elevated lifeguard platforms or chairs should also be furnished on the basis of one per 2,000 square feet of pool area.

c. Location of Equipment: Lifesaving equipment should be conspicuously displayed and strategically located around the pool deck or at lifeguard chairs. The equipment must be readily accessible, kept in good repair, and the function of each item marked. Bathers or other unauthorized personnel must not be permitted to tamper with or use the equipment for any purpose other than its intended use.

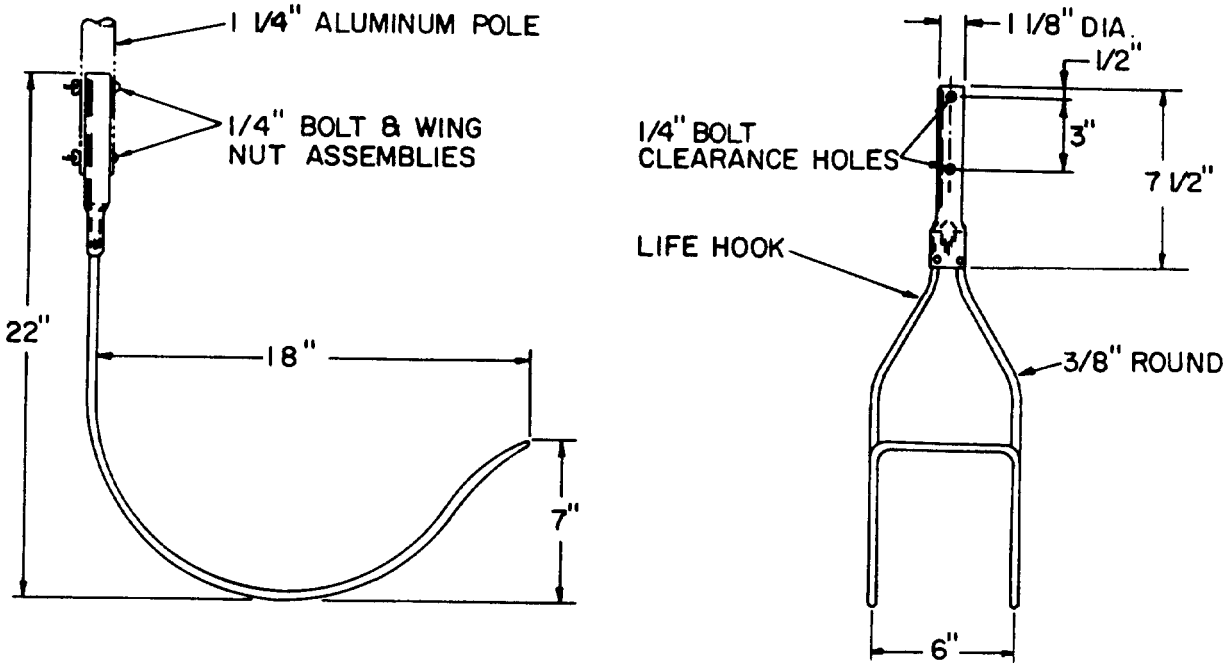
2-14. FIRST AID.

The following first aid techniques are most often used to revive drowning victims:

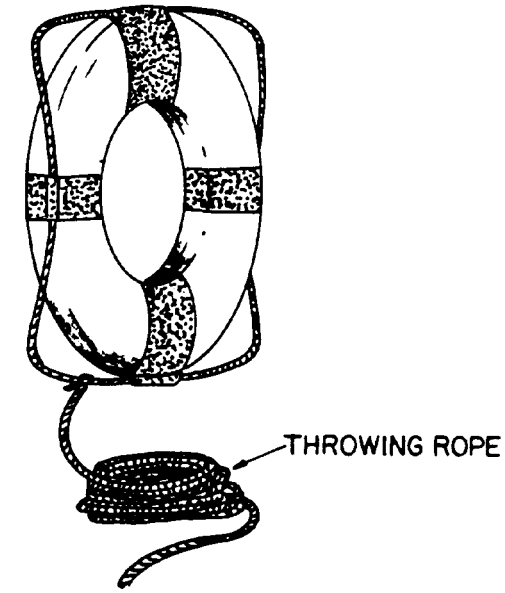
a. Mouth-to-Mouth Resuscitation: Mouth-to-Mouth resuscitation is the most effective and easily administered form of artificial respiration with which all pool operating personnel should be familiar. Procedures for administering mouth-to-mouth resuscitation are explained in detail and illustrated in TM 5-682.

b. Artificial Respiration: Artificial respiration by mechanical means (oxygen inhalers) is authorized only if properly trained operators are available to use the equipment.

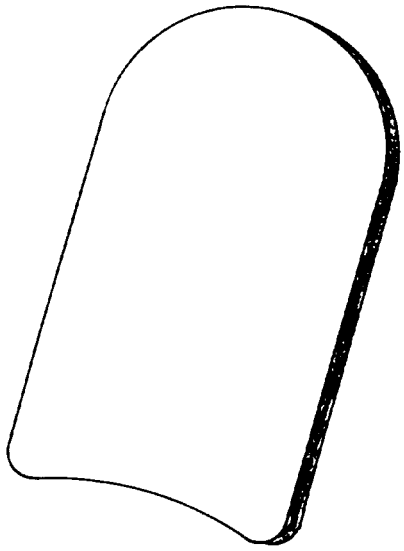
c. CPR (Cardio-Pulmonary Resuscitation): Cardio-pulmonary resuscitation is a lifesaving technique that combines mouth-to-mouth resuscitation with external cardiac compression to restore breathing and heartbeat. This technique should not be attempted unless administering personnel have been properly trained. Proper training requires annual certification.



LIFE HOOK



THROWING-RING BUOY



FLUTTER BOARD

Figure 2-1. Lifesaving Equipment